Use of Bootstrap to Make HTML Responsive

9

LEARNING OBJECTIVES

After completing this chapter, you will be able to understand:

- How to add Bootstrap to HTML pages to make them responsive.
- How to use various Bootstrap functions.
- Hands-on development with Bootstrap.
- How to use any text editor to code Bootstrap.

9.1 | Setting up Environment

For Bootstrap, you do not need to set up any environment. As is the case with HTML, you can use any text editor you like. You can use the same editor you had used for coding HTML, CSS, and jQuery as well. The only thing you need to make sure is that you add Bootstrap library to the page. Just like jQuery, there are two ways to do this. The first way is to add it from the external sources like CDN or Google, CDN or Bootstrap's website or your own server, it really does not matter. The second way is to download Bootstrap library and keep it in the same place as "*home.html*". If you change the place, you just need to give the proper path of that location. For example, some developers like to keep this file in a folder named *"bootstrap*". So, your path will be "*bootstrap/bootstrap.js*". In this case, *bootstrap.js* is the name of the current version of the library. The name can be anything you like as you are keeping it on your server. However, if you are using a hosted version from CDN, then you cannot change the filename. Let us see the following example:

```
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"
integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xIM+B07jRM"
crossorigin="anonymous"></script>
```

We need one more *js* to be included before *bootstrap.js*. This library called *popper.js*. The link is as follows:

```
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.
js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz0W1"
crossorigin="anonymous"></script>
```

For Bootstrap we need to add Bootstrap CSS as well. The procedure is exactly the same as mentioned above. There are two more attributes you can see here. First one is *"integrity*" which helps verify the authenticity of the file and second is "*crossorigin*" which is needed to tell the browser that cross-origin request is ok. This is an important concept if we are trying to access a file

from a different domain than ours. Almost all the newer browsers block the request thinking that this is **cross-site scripting** (**XSS**) attack. The following code shows how to get Bootstrap CSS file from a CDN server.

```
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1
/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY
/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">
```

As you may have noticed in the CSS case, we are not using *<script>* tag but instead are using the *<link>* tag. In the attribute we are telling the browser that this is a stylesheet by mentioning it in the "*rel*" attribute. Then in the "*href*" tag, we are mentioning the path. Other two attributes we have already covered.

Now you have seen how we got both the Bootstrap files from a CDN. In our case, we have used Bootstrap CDN. As you already learnt, the *<script>* tag will go under *<head>* tag; similarly, *<link>* will go under *<head>* tag too.

Since we are adding Bootstrap to make this application responsive, we need to tell the browser about it. This is something we can do by adding a *<meta>* tag under *<head>* element:

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

In the above line, by adding "*width=device-width*", we are telling the browser to set the width of the page as per the screen width. By "*initial-scale=1*", we are telling the browser to set the initial zoom level to 1 when the page is first loaded.

After all of the above, our header look as follows:

```
<head>
       <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js" >
</script>
       <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.
min.js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz
0W1" crossorigin="anonymous"></script>
    <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.
js" integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xIM+B07jRM"
crossorigin="anonymous"></script>
       <script>
           $( document ).ready(function() {
               $( "#searchbtn" ).click(function() {
                   alert("Search button is clicked. Value of Search Text is " +
$("#searchtxt").val() + " Category : " + $("#categorysel").children(":selected").
html());
               });

           });
       </script>
       <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1
/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/
iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">
       <meta name="viewport" content="width=device-width, initial-scale=1">
       <title>MyEShop</title>
</head>
```

In the above code, we are using the following jQuery code which captures the click event on the search button we have added.

```
$( "#searchbtn" ).click(function() {
                alert("Search button is clicked. Value of Search Text is " +
$("#searchtxt").val() + " Category : " + $("#categorysel").children(":selected").
html());
            });
```

Now let's use our Home page and start adding Bootstrap code to it.

9.1.1 Home Page with Bootstrap

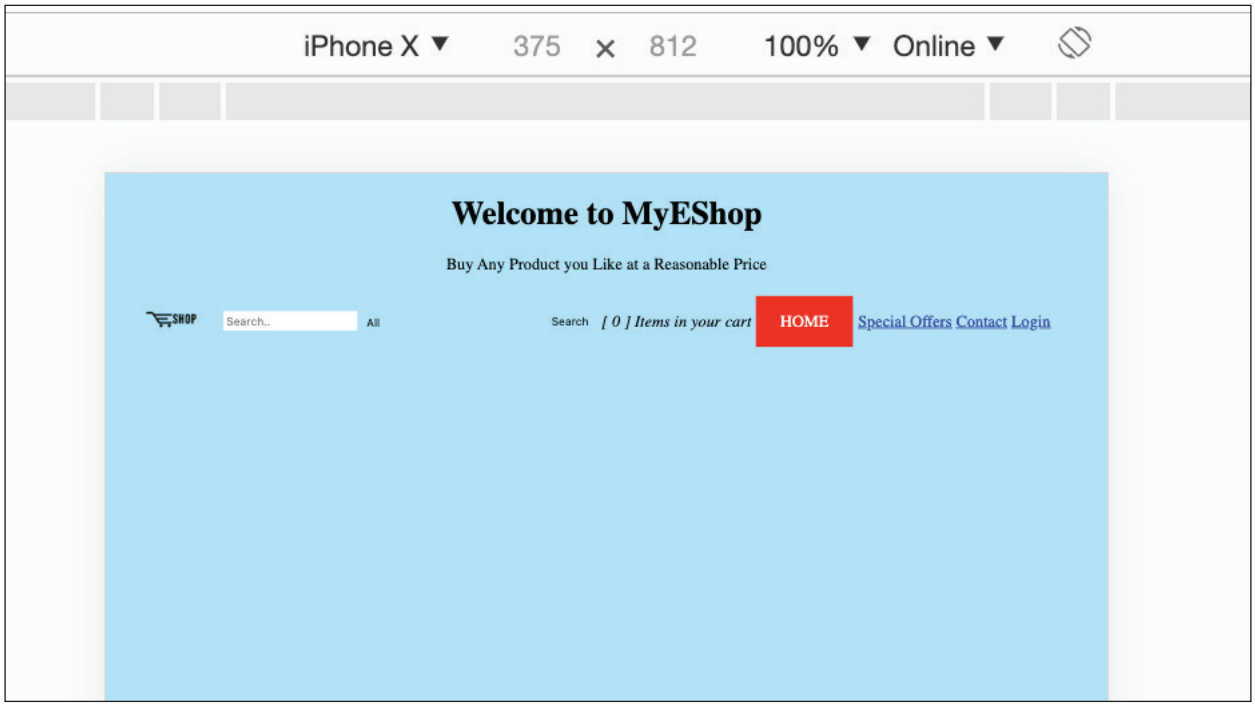
First let us add the container as we have learnt in Chapter 6. We will add this with div inside *<body>* tag:

```
<body style="background-color:#A2E9FF;">
      <div class="container">
```

This is how we tell Bootstrap which type of container we want. For now, let us go ahead with this.

QUICK CHALLENGE Try using *container-fluid* and see how the page gets rendered.

One thing you should remember is that *<table>* is not responsive and will not render properly on mobile devices. See the following screenshot indicating how the page looks on iPhone X.



This is not how we want the page to look because the alignment is misplaced a bit. Hence, we need to use * * and let Bootstrap arrange this for us. Hence, we must replace the following code with Bootstrap Grid:

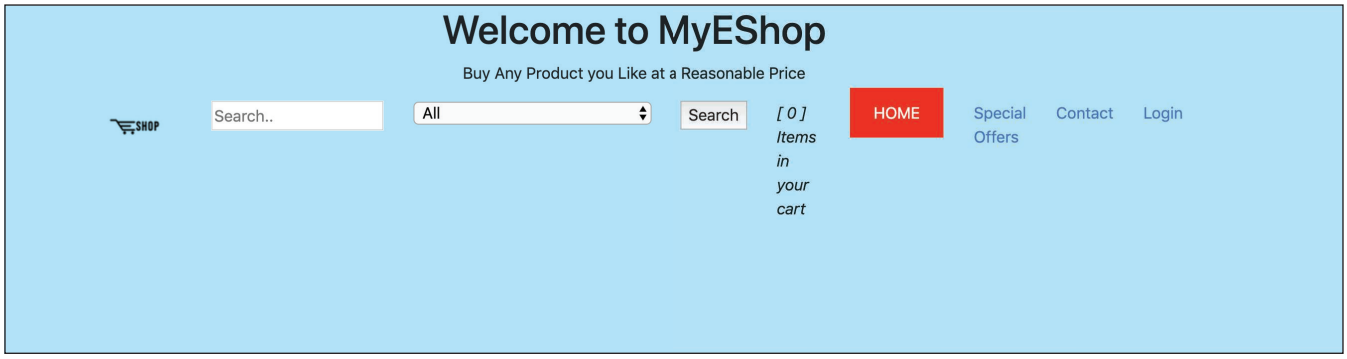
```
<table>
            <tr>
               <td><img src="myeshoplogo.png" alt="myeshop logo" width="50px"
height="60px"></td>
               <td><form> <input id="searchtxt" type="text" placeholder="Search..">
</form></td>
               <td>
                  <select id="categorysel">
                        <option>All</option>
                        <option>CLOTHES </option>
                        <option>FOOD AND BEVERAGES </option>
                        <option>HEALTH & BEAUTY </option>
                        <option>SPORTS & LEISURE </option>
                        <option>BOOKS & ENTERTAINMENTS </option>
                  </select>
               </td>
               <td><button id="searchbtn">Search</button></td>
               <td><span ><i> [ 0 ] Items in your cart </i> </span></td>
               <td><a style="background-color: red;color: white;padding: 1em 1.5em;-
text-decoration: none;text-transform: uppercase;" href="home.html">Home</a></td>
               <td><a href="specialofferrs.html">Special Offers</a></td>
               <td><a href="contact.html">Contact</a></td>
               <td><a href="login.html">Login</a></td>
            </tr>
         </table>
```

The above code gets replaced with the following code:

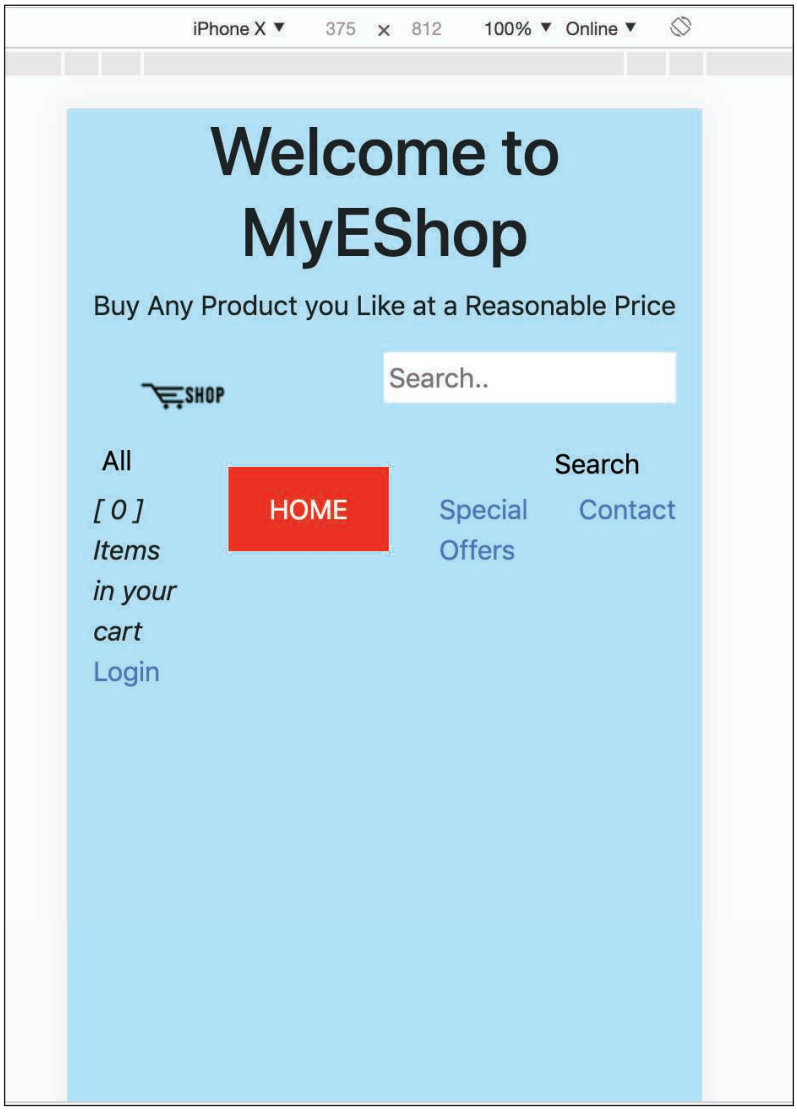
```
<div class="row">

               <div class="col"><img src="myeshoplogo.png" alt="myeshop logo"
width="50px" height="60px"></div>
               <div class="col"><form> <input id="searchtxt" type="text"
placeholder="Search.."></form></div>
               <div class="col">
                  <select id="categorysel">
                        <option>All</option>
                        <option>CLOTHES </option>
                        <option>FOOD AND BEVERAGES </option>
                        <option>HEALTH & BEAUTY </option>
                        <option>SPORTS & LEISURE </option>
                        <option>BOOKS & ENTERTAINMENTS </option>
                  </select>
               </div>
               <div class="col"><button id="searchbtn">Search</button></div>
               <div class="col"><span ><i> [ 0 ] Items in your cart </i> </span></div>
               <div class="col"><a style="background-color: red;color: white;padding:
1em 1.5em;text-decoration: none;text-transform: uppercase;" href="home.html">Home</a></
div>
               <div class="col"><a href="specialofferrs.html">Special Offers</a></div>
               <div class="col"><a href="contact.html">Contact</a></div>
               <div class="col"><a href="login.html">Login</a></div>
</div>
```

When we add bootstrap Grid like <div class=*"col"*> in place of <*table*>, the page looks good on both the devices – laptop as well as iPhone X (see both the screenshots below):

On Laptop:



On iPhone X:



Much better, right? That is the beauty of using Bootstrap. After adding this code, our final code looks as follows:

```
<!DOCTYPE html>
<html>
   <head>
      <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"
></script>
      <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.
min.js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz
0W1" crossorigin="anonymous"></script>
   <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.
js" integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xIM+B07jRM"
crossorigin="anonymous"></script>
      <script>
         $( document ).ready(function() {
            $( "#searchbtn" ).click(function() {
               alert("Search button is clicked. Value of Search Text is " +
$("#searchtxt").val() + " Category : " + $("#categorysel").children(":selected").
html());
            });

         });
      </script>
      <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1
/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/
iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">
      <meta name="viewport" content="width=device-width, initial-scale=1">
      <title>MyEShop</title>
   </head>
   <body style="background-color:#A2E9FF;">
      <div class="container">
         <h1 style="text-align:center;">Welcome to MyEShop</h1>
         <p style="text-align:center;">Buy Any Product you Like at a Reasonable Price
</p>

         <div class="row">

               <div class="col"><img src="myeshoplogo.png" alt="myeshop logo"
width="50px" height="60px"></div>
               <div class="col"><form> <input id="searchtxt" type="text"
placeholder="Search.."></form></div>
               <div class="col">
                  <select id="categorysel">
                        <option>All</option>
                        <option>CLOTHES </option>
                        <option>FOOD AND BEVERAGES </option>
                        <option>HEALTH & BEAUTY </option>
                        <option>SPORTS & LEISURE </option>
                        <option>BOOKS & ENTERTAINMENTS </option>
                  </select>
               </div>
               <div class="col"><button id="searchbtn">Search</button></div>
               <div class="col"><span ><i> [ 0 ] Items in your cart </i> </span></div>
               <div class="col"><a style="background-color: red;color: white;padding:
1em 1.5em;text-decoration: none;text-transform: uppercase;" href="home.html">Home</a>
</div>
               <div class="col"><a href="specialofferrs.html">Special Offers</a></div>
               <div class="col"><a href="contact.html">Contact</a></div>
               <div class="col"><a href="login.html">Login</a></div>
            </div>
      </div>
   </body>
</html>
```

Summary

As you have seen, it is very easy to add Bootstrap to any page and use it without installing anything on the server or client side. The only thing we need to do is get the jQuery, popper.js, Bootstrap JS, and Bootstrap CSS library. Bootstrap code can be written in any simple text editor as well. So getting started with Bootstrap is not at all a difficult task. Pages build with Bootstrap looks good on mobile devices.

In this chapter, we have learned the following concepts:

1. Accessing Bootstrap library and setting up the dependencies for it.
2. Adding Bootstrap library to HTML pages to use the responsive elements.
3. Various Bootstrap functions that we can use on the page.
4. Using grid in place of *<table>* to make it responsive on mobile devices.

In Chapter 10, we will learn about Java and how to use it to develop backend code. We will go through Java 9 and Java 11 to see the latest improvements. We will spend time to understand concepts like JVM, compiler, garbage collector, JRE, and JDK. Also we will briefly touch upon object-oriented programming and learn concepts like polymorphism, inheritance, abstraction, and encapsulation. We will also learn Java reserved words, classes and objects, variables, methods, constructors, etc.

Multiple-Choice Questions

1. How many columns are there in the Bootstrap grid system?
   - **(a)** 12
   - **(b)** 6
   - **(c)** 14
   - **(d)** 9
2. Which of the given plugins is used to cycle through elements, like a slideshow?
   - **(a)** Scrollspy
   - **(b)** Carousel
   - **(c)** Slideshow
   - **(d)** Orbit
3. What is the default size of H5 Bootstrap heading?
   - **(a)** 16px
   - **(b)** 14px
   - **(c)** 20px
   - **(d)** 18px
4. Which class creates a list of items?
   - **(a)** list-group
   - **(b)** menu-group
   - **(c)** list-grp
   - **(d)** lst-group
5. Which of the given class specifies a dangerous or potentially negative action?
   - **(a)** .active
   - **(b)** .warning
   - **(c)** .danger
   - **(d)** .success

Review Questions

1. What is the use of crossorigin=”anonymous”?
2. What is the use of popper.min.js?
3. How do we create grid with Bootstrap?
4. What is the use of <meta name=”viewport” content=”width=device-width, initial-scale=1”>?

Exercise

Carry on with the bootstrapping process of this page. Think of various areas that you can improve for mobile devices and add those elements. Also, add Bootstrap on the new pages you have added as mentioned in Chapter 7.

Project Idea

Take the example of a school management system from Chapter 8’s Project Idea section. These pages now have a nice design and interactivity. Make sure they look nice on different screen sizes like iPad, mobile phones, etc. Add Bootstrap to these pages.

Recommended Readings

1. Jacob Lett. 2018. *Bootstrap Reference Guide: Quickly Reference All Classes and Common Code Snippets (Bootstrap 4 Tutorial Book 2)*. Bootstrap Creative
2. Jake Spurlock. 2013. *Bootstrap: Responsive Web Development*. O'Reilly: Massachusetts
3. Alan Forbes. 2014. *The Joy of Bootstrap: A smarter way to learn the world's most popular web framework*. Plum Island Publishing: Massachusetts